

TRANSMITTAL LETTER TO THE UNITED STATES

DESIGNATED/ELECTED OFFICE (DO/EO/US)

CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

RCA88859

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/582382

INTERNATIONAL APPLICATION NO.

PCT/US99/00409

INTERNATIONAL FILING DATE

08 January 1999

PRIORITY DATE CLAIMED

08 January 1998

TITLE OF INVENTION

VIDEO PROGRAM GUIDE APPARATUS AND METHOD

APPLICANT(S) FOR DO/EO/US

MARK SHERIDAN WESTLAKE AND ROBERT JOHN STRONG

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

RETURN RECEIPT POSTCARD

21. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$970.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$840.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$690.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$670.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$96.00

ENTER APPROPRIATE BASIC FEE AMOUNT =**\$840.00**

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE |
|--------------------|--------------|--------------|-----------|
| Total claims | 13 - 20 = | 0 | x \$18.00 |
| Independent claims | 3 - 3 = | 0 | x \$78.00 |

\$0.00**\$0.00**Multiple Dependent Claims (check if applicable). ☐**\$0.00****TOTAL OF ABOVE CALCULATIONS =****\$840.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00**SUBTOTAL =****\$840.00**

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00**TOTAL NATIONAL FEE =****\$840.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00**TOTAL FEES ENCLOSED =****\$840.00**

Amount to be:
refunded \$
charged \$

- ☐ A check in the amount of _____ to cover the above fees is enclosed.
- ☒ Please charge my Deposit Account No. **07-0832** in the amount of **\$840.00** to cover the above fees.
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **07-0832** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

JOSEPH S. TRIPOLI - PATENT OPERATIONS
THOMSON MULTIMEDIA LICENSING, INC.
PO BOX 5312 - 2 INDEPENDENCE WAY
PRINCETON, NJ 08543-5312

SIGNATURE

FRANK Y. LIAO

NAME

40,065

REGISTRATION NUMBER

DATE

4/PR+9

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VIDEO PROGRAM GUIDE APPARATUS AND METHOD

FIELD OF THE INVENTION

The subject invention concerns a video program guide
5 apparatus and method, and in particular, to an apparatus and method
for allowing a user to rate a selected program.

BACKGROUND OF THE INVENTION

The act of selecting a television program to watch has
10 become more complicated in that the number of available channels
has increased dramatically of late. For example, RCA® DSS® direct
broadcast satellite receivers provide as many as 150 channels to
choose from. Heretofore, a user who wanted to see "what's on" could
merely consult a television schedule printed in his local newspaper in
15 the hope that he would eventually find a program which sparked his
interest.

Such a practice may work well when there are only a few
television channel schedules to examine, however, it is unlikely that a
viewer would be able to examine the complete schedules for 150
20 television channels, just to see "what's on" at a given time. Such a
task would be daunting even if all of the programs were to be listed
by category. A viewer may find that there are only a few programs
of interest to him out of the vast number of available programs.
Consequently, it is felt that as the number of channels increases, the
25 chances of successfully locating a desirable program in a short time
becomes more and more unlikely.

An Electronic Program Guide (EPG) may partially alleviate
the above problem. An EPG is an interactive, on-screen display
feature that displays information analogous to TV listings found in
30 local newspapers or other print media. In addition, an EPG also

includes information necessary for collating and decoding programs. An EPG provides information about each program within the time frames covered by the EPG which typically ranges from the next hour up to seven days. The information contained in an EPG includes

5 programming characteristics such as channel number, program title, start time, end time, elapsed time, time remaining, rating (if available), topic, theme, and a brief description of the program's content. EPGs are usually arranged in a two-dimensional table or grid format similar to the printed TV guide, with time information on one

10 axis and channel information on the other axis.

Unlike non-interactive guides that reside on a dedicated channel and merely scroll through the current programming on the other channels for the next 2 to 3 hours, EPGs allow viewers to select any channel at any time during some period into the future, e.g., up to

15 seven days forward. Further EPG features include the ability to highlight individual cells of the grid containing program information. Once highlighted, the viewer can perform functions pertaining to that selected program. For instance, the viewer could instantly switch to that program if it is currently being aired. Viewers could also

20 program one touch video cassette recording (VCR) or the like if the television is properly configured and connected to a recording device. Such EPGs are known in the art and described, for instance, in US Pat. Nos. 5,353,121; 5,479,268; and 5,479,266 issued to Young et al. and assigned to StarSight Telecast, Inc.

25 In addition, US Pat. No. 5,515,106, issued to Chaney et al., and assigned to the same assignee of the present invention, describes in detail an exemplary embodiment including data packet structure necessary to implement an exemplary program guide system. The exemplary data packet structure is designed so that both the channel

30 information (e.g., channel name, call letters, channel number, type,

etc.) and the program information (e.g., title, rating, star, etc.) relating to a program may be transmitted from a program guide database provider to a receiving apparatus efficiently.

Currently, systems are known for monitoring what a user has previously watched, and then suggesting similar programming based on the watching habit of the user. This is disclosed, for example, in allowed U.S. Pat. Application No. 08/573,113, filed 12/15/95, in the names of Wehmeyer, et al., and assigned to the same assignee of the present invention. These known systems, however, do not allow the user to modify the monitoring process in accordance with user preferences. That is, the user cannot indicate whether or not the user liked the program, and therefore, the monitoring/suggesting feature cannot take into account this information when making program suggestions to the user.

SUMMARY OF THE INVENTION

The present inventor recognizes that it is advantageous to get some affirmative feedback about a selected program so that any suggested program may better match a user's tastes or watching habits. Therefore, a system and a related method for selecting a program for viewing is described. A plurality of programs and associated program information are received from a remote source. A program from said plurality of programs is first selected in response to a user input. Rating information for this selected program is inputted by a user locally. Another program may then be selected, based on the input rating information and the associated program information.

BRIEF DESCRIPTION OF THE DRAWING

FIGURE 1 is an illustration of a screen display showing an
5 EPG.

FIGURE 2A and 2B are illustrations of an exemplary screen
display for a user to rate a selected program.

FIGURE 3 is a flowchart useful in understanding the
invention.

10 FIGURE 4 is an illustration in block diagram form of an
apparatus suitable for use with the invention.

DETAILED DESCRIPTION OF THE INVENTION

15 Television systems such as the RCA® DSS® direct
broadcast satellite system and Starsight® transmit channel guides for
display on the television receivers of subscribers. FIGURE 1 shows an
Electronic Program Guide screen display 110 which may be produced,
for example, by an RCA® DSS® direct broadcast satellite receiver
20 system, manufactured by Thomson Consumer Electronics, Inc.
Indianapolis, IN. A user selects a television program from a Program
Guide for viewing, by moving a cursor (via operation of, for example,
up, down, right, and left, direction control keys, on a remote control
device 450R of FIG. 4) to a cell of the program guide screen display
25 which contains the name of the desired program. When a SELECT key,
for example, of the remote control 450R is pressed, the current x and
y position of the cursor is evaluated to derive virtual channel and
program time information. In this example of FIGURE 1, a particular
television show, CINE SATURDAY NIGHT MOVIE: ZULU in cell 105 has
30 been highlighted for selection by use of the cursor keys on a remote

5

control unit (e. g., 450R of FIGURE 4). The highlighting is illustrated by the dark box outlining the title in FIGURE 1. Normally, upon pressing the SELECT key, the relevant programming data is transferred to a programming unit. Note also that an auxiliary text display 120 is shown. Auxiliary text display 120 provides additional program data relating to the highlighted television program. A further use for the data provided by channel guide screen 110 and auxiliary text display 120 will be described below according to aspects of the present invention.

10 In addition, once a program has been highlighted, as shown in FIGURE 1 and described above, a user may also press a RATING key on remote control unit 450R, for example, to provide evaluation input for a particular show he or she has been watching, according to an aspect of the invention. This exemplary RATING key, 15 may also be pressed during program viewing as shown in FIGURE 2A. Once this key is pressed, the user is allowed to input how much the user has enjoyed the program. As shown in FIGURE 2A, an exemplary embodiment is shown in which the phrase "I *LOVED* this program" is first displayed. This may be, for example, the highest rating a user 20 can give to a program. If the user agrees with this rating, then the user may press, for example, the RATING key again to confirm the rating for this program. The user can also enter a different rating for this program by selecting the left arrow 205 or right arrow 206. The rating displayed will be changed, for example, to "I *HATED* this 25 program", as shown in FIGURE 2B.

FIGURE 3 shows an exemplary flow diagram of a subroutine program which may be executed by an exemplary microprocessor 415R (shown in FIGURE 4) for implementing the features of the present invention. The program is entered at step 30 300. The microprocessor then determines whether the "Rating Mode"

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has been requested by an user in step 305 for a selected program. Again, as described previously, the "Rating Mode" may be invoked by pressing a key such as RATING on a user entry device, such as remote control unit 450R. Once the user has requested to rate a program, the

5 microprocessor 415R will facilitate the entry of the user rating. As shown in step 310 and also as discussed above, one exemplary embodiment for obtaining the user rating information is by displaying a first rating such as "I *LOVED* this program" as shown in FIGURE 2A. In steps 315 and 320, the subroutine will also display another rating

10 for the user to select, if the user request another rating as shown in FIGURE 2B.

Steps 310 - 320 show one embodiment of user entry of rating information. Another exemplary embodiment may include prompting the user to enter a number such as 1 to 5 with 5 as either

15 the highest or the lowest rating. Another embodiment allows the user to enter a letter such as A, B, C, D, with A as the highest or lowest rating, for example.

Once the rating information is entered by the user, the program allows the user to confirm the rating information in step

20 323, for example, by pressing a key, such as the RATING key as discussed previously. As shown in step 330, once the user confirms the information, this information is then stored in, for example, memory 421R of FIGURE 4, along with the other programming information associated with the selected program, as shown, for

25 example, in block 120 of FIGURE 1.

In step 335, the user may then request the system to suggest programs based on the user entered ratings information. The user may request this, for example, by highlighting an icon SUGGEST

106, as shown in FIGURE 1. Once this has been requested, the system

30 will suggest programs by comparing the user entered rating

information with the program guide information as shown in step 335.

Various methods may be implemented based on the user entered rating information and the program guide data received remotely. A simple suggestion algorithm may be, for example, to suggest to a viewer all the programs which have the same characteristics as a program which has received the highest user rating, based on the program information from the program guide. In other words, the system may suggest to the viewer all the programs which may have the same actor, producer, and/or theme, for example. Another method may comprise concentrating on one particular aspect of programming information such as THEME. The user ratings may then be used to create a histogram for each THEME type to see if there is any preference trend for that viewer. If a preference trend is detected, then a program having that particular theme is then suggested. Other suggestion methods may include having some weighting factors for each programming characteristic of a rated program. One skilled in the art can readily recognize that many methods may be developed to take advantage of both the user input rating information of programs viewed the received program guide information to suggest new programs to user.

As noted above, the program guide information used by the controller of the subject apparatus according to the aspects of the present invention may be received from a satellite television communication system. FIGURE 4 shows such a satellite television communication system in which, a satellite 400S receives a signal representing audio, video, or data information from an earth-based transmitter 400T. The satellite amplifies and rebroadcasts this signal to a plurality of receivers 400R, located at the residences of consumers, via transponders operating at specified frequencies and

having given bandwidths. Such a system includes an uplink transmitting portion (earth to satellite), an earth-orbiting satellite receiving and transmitting unit, and a downlink portion (satellite to earth) including a receiver located at the user's residence.

- 5 In a such a satellite system, the information necessary to select a given television program is not fixedly-programmed into each receiver but rather is down-loaded from the satellite continually on each transponder. The television program selection information comprises a set of data known as a Master Program Guide (MPG),
- 10 which relates television program titles, their start and end times, a virtual channel number to be displayed to the user, and information allocating virtual channels to transponder frequencies and to a position in the time-multiplexed data stream transmitted by a particular transponder. In such a system, it is not possible to tune
- 15 any channel until the first master program guide is received from the satellite, because the receiver (IRD, or Integrated Receiver Decoder) literally does not know where any channel is located, in terms of frequency and position (i.e. data time slot) within the data stream of any transponder.
- 20 A master program guide is preferably transmitted on all transponders with the television program video and audio data, and is repeated periodically, for example, every 2 seconds. The master program guide, once received, is maintained in a memory unit in the receiver, and updated periodically, for example every 30 minutes.
- 25 Retention of the master program guide allows instantaneous television program selection because the necessary selection data are always available. If the master program guide were to be discarded after using it to select a television program, then a delay of at least two seconds would be incurred while a new program guide was

acquired, before any further television program selections could be performed.

Once the channel transponder carrying a desired television program is tuned, the data packets containing the audio and video information for that program can be selected from the data stream received from the transponder by examining the data packets for the proper SCID (Service Component Identifier) 12 bit code. If the SCID of the currently received data packet matches the SCID of the desired television program as listed in the program guide, then the data packet is routed to the proper data processing sections of the receiver. If the SCID of a particular packet does not match the SCID of the desired television program as listed in the program guide, then that data packet is discarded.

A brief description of system hardware, suitable for implementing the above-described invention, now follows. In FIGURE 4, a transmitter 400T processes a data signal from a source 401 (e.g., a program signal source) and transmits it to a satellite 400S which receives and rebroadcasts the signal to a receiving antenna 400A which applies the signal to a receiver 400R. Transmitter 400T includes an encoder 410T, a modulator (i.e., modulator/forward error corrector (FEC)) 420T, and an uplink unit 430T. Encoder 410T compresses and encodes signals from source 401 according to a predetermined standard such as MPEG. MPEG is an international standard developed by the Moving Picture Expert Group of the International Standards Organization for coded representation of moving pictures and associated audio stored on digital storage medium. An encoded signal from unit 410T is supplied to modulator/Forward Error Corrector (FEC) 420T, which encodes the signal with error correction data, and Quaternary Phase Shift Key (QPSK) modulates the encoded signal onto a carrier.

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Uplink unit 430T transmits the compressed and encoded signal to satellite 400S, which broadcasts the signal to a selected geographic reception area. The signal from satellite 400S is received by an antenna dish 400A coupled to an input of a so-called set-top receiver 400R (i.e., an interface device situated atop a television receiver). Receiver 400R includes a demodulator (demodulator/Forward Error Correction (FEC) decoder) 410R to demodulate the signal and to decode the error correction data, an IR receiver 412 for receiving IR remote control commands, a microprocessor 415R, which operates interactively with demodulator/FEC unit 410R, and a transport unit 420R to transport the signal to an appropriate decoder 430R within unit 400R depending on the content of the signal, i.e., audio or video information. An NTSC Encoder 440R encodes the decoded signal to a format suitable for use by signal processing circuits in a standard NTSC consumer VCR 402 and standard NTSC consumer television receiver 403. Microprocessor (or microcontroller, or microcomputer) 415R receives infrared (IR) control signals such as key presses SELECT, RATING as discussed above, from remote control unit 450R, and sends control information to VCR 402 via an IR link 418R. Microprocessor 415R also generates the on-screen display (OSD) signals needed for presenting the interactive or confirmation EPG display screen shown for example in FIGURES 1, 2A or 2B, to the user. Microprocessor 415R also receives and interprets cursor key X and Y information in order to control the highlighting and selection of user choices in the on-screen display screens. In addition, Microprocessor 415R executes the program subroutine as represented by flow chart of FIGURE 3 to provide the features according to aspects of the present invention.

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Although the invention was described with reference to a satellite television system, it is equally applicable to ground based television broadcast systems, both digital and analog, a settop box receiver, or any other electronic devices capable of receiving and
5 processing electronic program guide information.

It will be understood that various changes in the details, materials, and arrangements of the parts which have been described and illustrated above in order to explain the nature of this invention may be made by those skilled in the art without departing from the
10 principle and the scope of the invention as recited in the following claims.

1 2
CLAIMS

1. A method for controlling a signal processing system, comprising the steps of:
 - 5 receiving from a remote source a plurality of programs and associated program information;
selecting a first program from said plurality of programs in response to a user input;
inputting rating information for said first selected program; and
 - 10 selecting a second program in response to said input rating information and said associated program information.
2. The method of claim 1 wherein said rating information indicates user preference for said first selected program.
- 15 3. The method of claim 2 wherein said rating information comprising at least a numeric character.
4. The method of claim 3 wherein said rating information comprising
- 20 at least an alphabetic character.
5. The method of claim 1 further comprising the step of storing said rating information in memory.
- 25 6. A method for processing program guide information, comprising the steps of:
 - receiving said program guide information from a remote source;
 - storing said program guide information in memory;
 - obtaining a rating locally for a selected program; and
 - 30 associating said rating with said selected program.

7. The method of claim 6 wherein said rating indicates user preference for said selected program.

5 8. The method of claim 7 further comprising the step of:
storing said rating with said selected program alone with portion of said program guide information associated with said selected program.

10 9. An apparatus for suggesting a program for viewing, comprising:
means for receiving from a remote source a plurality of programs and associated program information;
means for selecting a first program from said plurality of programs in response to a user input;
15 means for inputting rating information locally for said first selected program; and
means for selecting a second program based on said input rating information and said associated program information.

20 10. The apparatus of claim 9 wherein said rating information indicates user preference for said first selected program.

11. The apparatus of claim 10 wherein said rating information comprising at least a numeric character.

25 12. The apparatus of claim 11 wherein said rating information comprising at least an alpha character.

13. The method of claim 1 wherein the step of inputting said rating
30 information is performed locally.

ABSTRACT

A system and a related method for selecting a program for viewing is described. A plurality of programs and associated program information are received from a remote source. A program
5 from said plurality of programs is first selected in response to a user input. Rating information for this selected program is input by a user locally. Another program may then be selected, based on the input rating information and the associated program information.

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| | | | | | |
|-------------|---------------------------------|---------------|--|------------|------|
| CH 150 | | PROGRAM GUIDE | | 7:05pm | |
| | | 7:00pm | | | |
| HBO 102 | OTHER PEOPLE'S MONEY | | <div>110</div> <div>120</div> <div>105</div> <div>MOVIE TITLE: ZULU STARRING: STANLEY BAKER & MICHAEL CAINE PRODUCER: STANLEY BAKER RATING: PG-13 (VIOLENCE) THEME: ACTION/ADVENTURE REVIEW: ☆☆☆ 1/2</div> <div>106</div> <div>PLOT: A VASTLY OUTNUMBERED COMPANY OF BRITISH SOLDIERS IN LATE 19TH CENTURY SOUTH AFRICA DEFENDS AN ISOLATED OUTPOST AGAINST AN ATTACK BY 40,000 ZULU WARRIORS.</div> | | |
| CBS 106 | EVENING NEWS | | | | |
| UPN 113 | STAR TREK: VOYAGER | | | | |
| CINE 210 | CINE SATURDAY NIGHT MOVIE: ZULU | | | | |
| CNN 305 | PRIME NEWS | BOTH SIDES | RELIABLE SOURCES | WORLD NEWS | |
| USA 422 | COUNTER STRIKE | | QUANTUM LEAP | | |
| MORE | | MOVIES | SPORTS | SUGGEST | EXIT |

FIG. 1

2/4

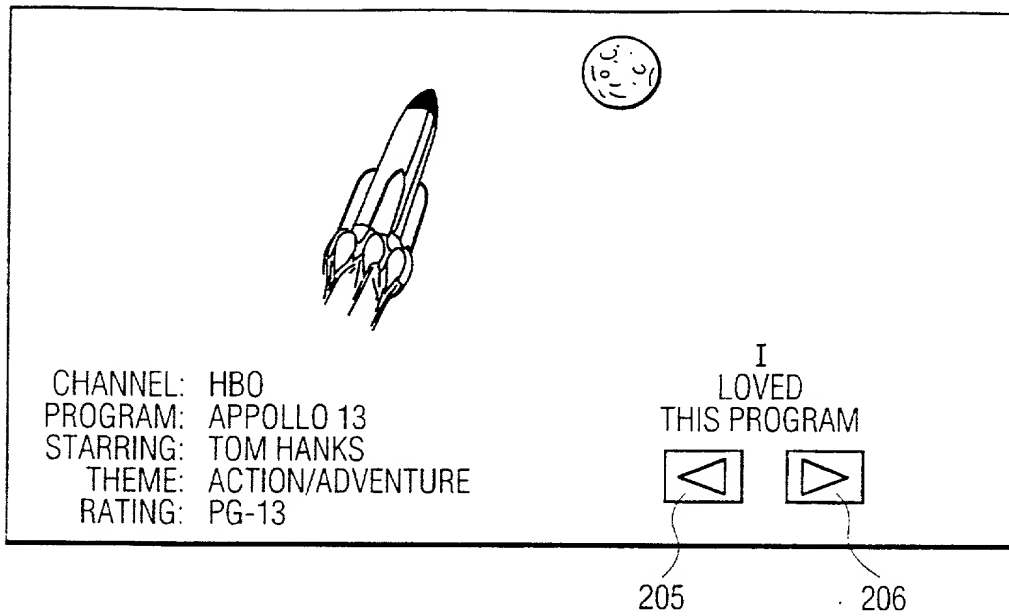


FIG. 2A

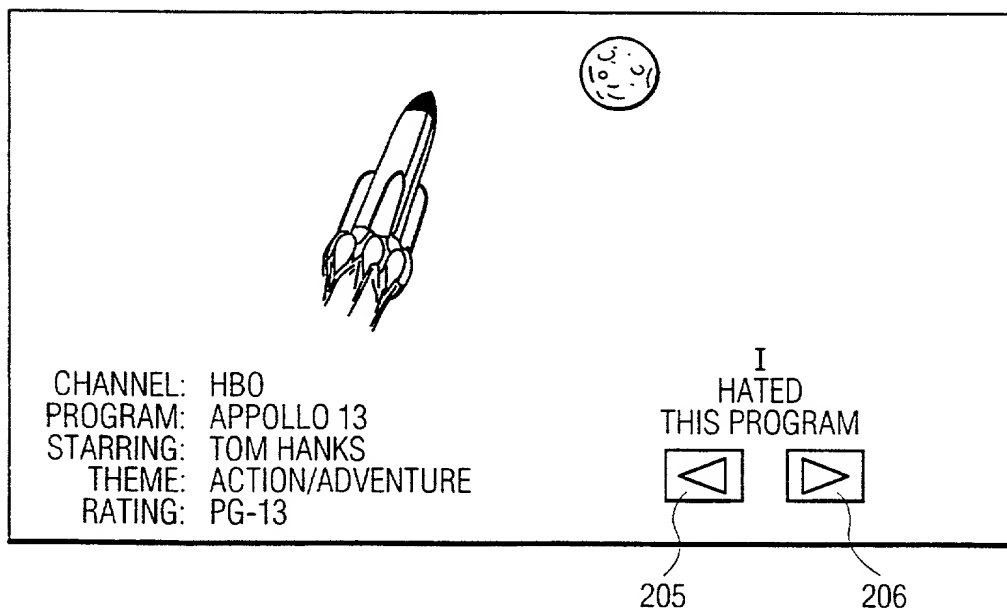


FIG. 2B

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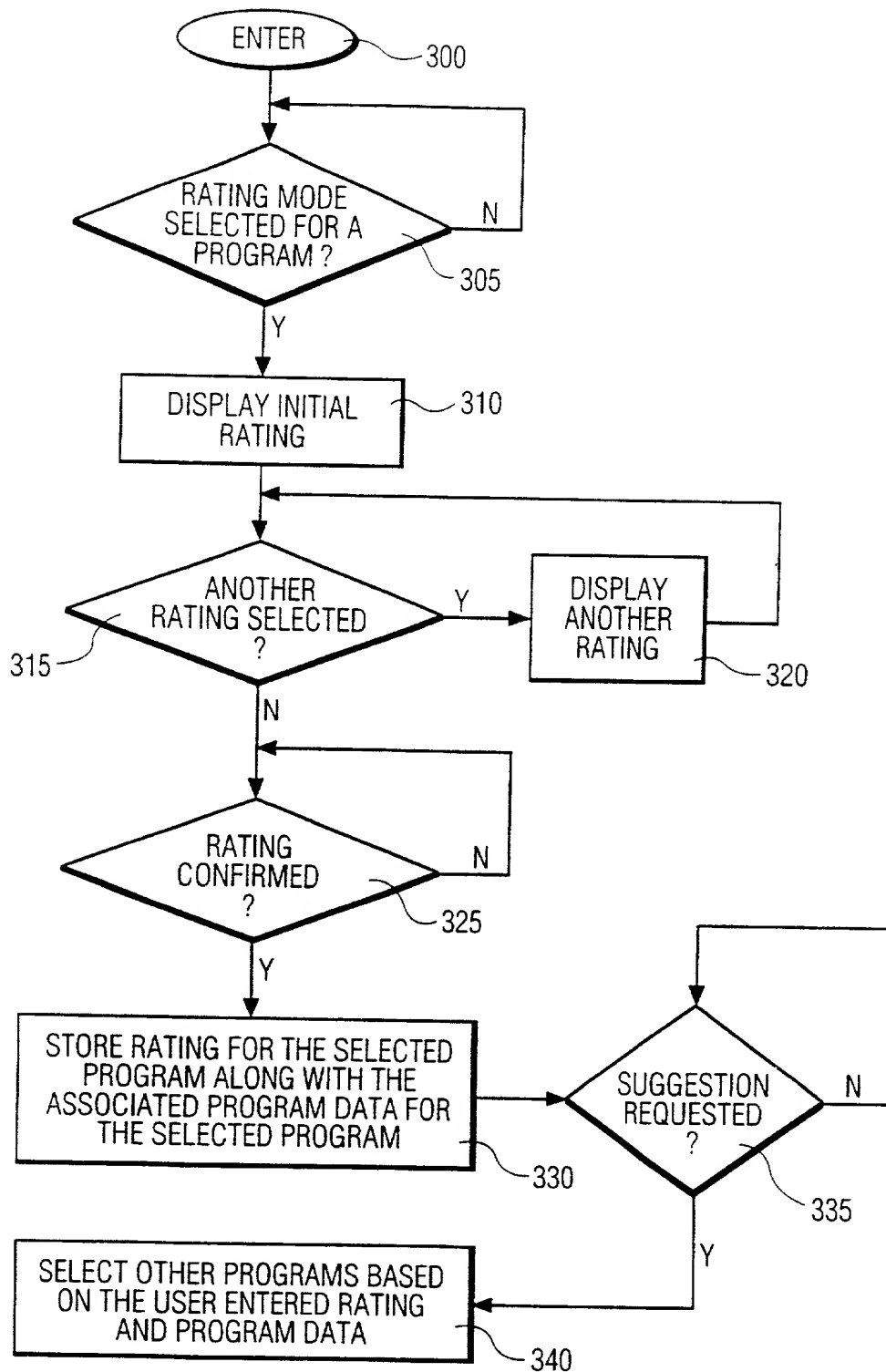


FIG. 3

4/4

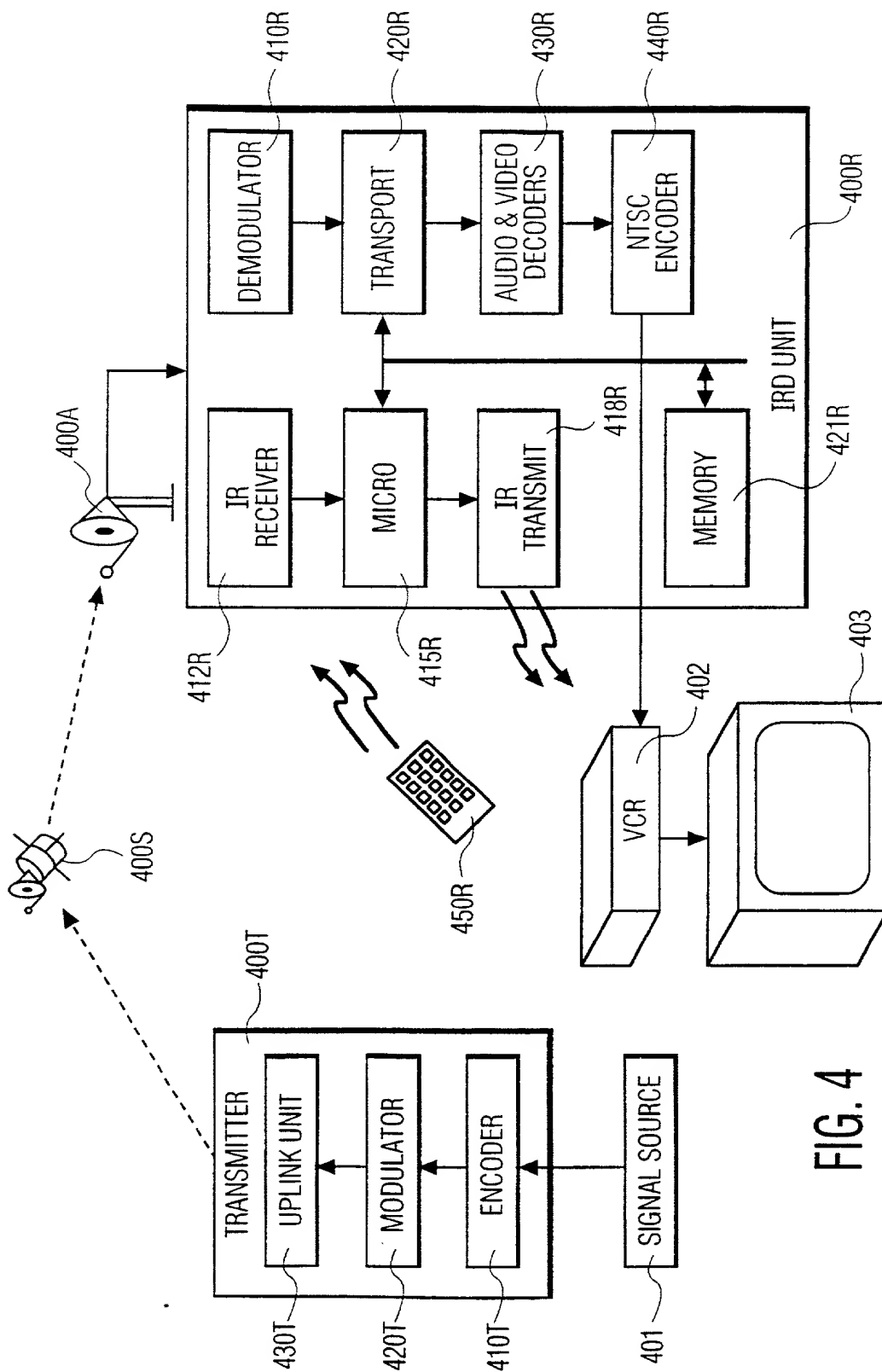


FIG. 4

Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (12-97)
Approved for use through 9/30/00. OMB 0651-0032
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

| | |
|--------------------------|------------------------|
| Attorney Docket Number | RCA 88859 |
| First Named Inventor | Mark Sheridan Westlake |
| COMPLETE IF KNOWN | |
| Application Number | |
| Filing Date | |
| Group Art Unit | |
| Examiner Name | |

As a below named inventor, I hereby declare

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VIDEO PROGRAM GUIDE APPARATUS AND METHOD

the specification of which (Title of the Invention)

☐ is attached hereto
OR

☒ was filed on (MM/DD/YYYY) January 8, 1999 as United States Application Number or PCT International

Application Number PCT/US99/00409 and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign Application Number(s) | Country | Foreign Filing Date (MM/DD/YYYY) | Priority Not Claimed | Certified Copy Attached? | |
|-------------------------------------|---------|----------------------------------|--------------------------|--------------------------|--------------------------|
| | | | | YES | NO |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

| Application Number(s) | Filing Date (MM/DD/YYYY) | <input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto. |
|-----------------------|--------------------------|--|
| 60/070,798 | January 8, 1998 | |

[Page 1 of 2]

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DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

| U. S. Parent Application or PCT Parent Number | Parent Filing Date (MM/DD/YYYY) | Parent Patent Number (if applicable) |
|---|---------------------------------|--------------------------------------|
| PCT/US99/00409 | January 8, 1999 | |

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Customer Number

OR

☒ Registered practitioner(s) name/registration number listed below

Place Customer Number Bar Code Label here

| Name | Registration Number | Name | Registration Number |
|-------------------|---------------------|------|---------------------|
| JOSEPH S. TRIPOLI | 26,040 | | |
| JOSPEH J. LAKS | 27,914 | | |
| FRANK Y. LIAO | 40,065 | | |

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to:

☐ Customer Number or Bar Code Label

OR ☒ Correspondence address below

| | | | |
|---------|---------------------------------------|-----------|--------------|
| Name | Joseph S. Tripoli - Patent Operations | | |
| Address | THOMSON multimedia Licensing Inc. | | |
| Address | PO Box 5312 | | |
| City | Princeton | State | NJ |
| | | ZIP | 08540 |
| Country | US | Telephone | 609-734-9497 |
| | | Fax | 609-734-9700 |

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor

| | | | |
|--|--------------------------------|------------------------|----------|
| Given Name (first and middle (if any)) | | Family Name or Surname | |
| MARK SHERIDAN | | WESTLAKE | |
| Inventor's Signature | <i>Mark Sheridan</i> | | Date |
| | | | 10/20/00 |
| Residence: City | Indianapolis | State | IN |
| | | Country | US |
| Post Office Address | 11227 Knightsbridge Lane IN | | |
| Post Office Address | Indianapolis, Indiana 46038 US | | |
| City | | State | |
| | | ZIP | |
| | | Country | |

☒ Additional inventors are being named on the 1 supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

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DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet
Page 1 of 1

Name of Additional Joint Inventor, if any:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

ROBERT JOHN

STRONG

Inventor's
Signature

ROBERT JOHN STRONG

Date

10.16.00

Residence: City

Arlington Heights

State

IL

Country

US

Citizenship

US

Post Office Address

200 North Arlington Heights Road #1015

IL

Post Office Address

Arlington Heights, IL 60004

City

State

ZIP

Country

Name of Additional Joint Inventor, if any:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

Inventor's
Signature

Date

Residence: City

State

Country

Citizenship

Post Office Address

Post Office Address

City

State

ZIP

Country

Name of Additional Joint Inventor, if any:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

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Signature

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Residence: City

State

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